

## P/N: 72501-0103

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<b>General description</b>	
The FLIR T1020 is designed for the expert requiring the highest performance and the latest technology available. The camera combines excellent ergonomics and feature-rich flexibility with superior image quality at an infrared resolution of 1024 × 768 pixels. High accuracy and sensitivity together with radiometric recording and streaming options make the FLIR T1020 well suited for advanced research and development.	
Benefits:	
<ul style="list-style-type: none"> <li>• Tailor made for research and development: The FLIR T1020 has high accuracy and high sensitivity, to accurately measure the smallest temperature differences. With real-time radiometric recording, it is possible to capture fast events on the camera's SD card for further analysis by the supplied analysis software.</li> <li>• Flexible and feature rich: A wide variety of measuring and analysis functions make the FLIR T1020 flexible for your every need. Two programmable buttons provide easy access to favorite functions.</li> <li>• Highest performance with the latest technology: The FLIR T1020 is equipped with the innovative Multi Spectral Dynamic Imaging (MSX) feature, which produces an image richer in detail than ever before.</li> </ul>	
<b>Imaging and optical data</b>	
IR resolution	1024 × 768 pixels
MSX resolution	1024 × 768 pixels
Thermal sensitivity/NETD	<20 mK @ +30°C (+86°F)
Field of view (FOV)	45° × 34°
Minimum focus distance	0.2 m (0.66 ft.)
Field of view (FOV) / Minimum focus distance	45° × 34° / 0.2 m (0.66 ft.)
Focal length	21.2 mm (0.83 in.)
Spatial resolution (IFOV)	0.80 mrad
Lens identification	Automatic
F-number	1.1
Image frequency	30 Hz
Focus	One shot or manual
Digital zoom	1–8× continuous
Digital image enhancement	Adaptive digital noise reduction
<b>Detector data</b>	
Detector type	Focal Plane Array (FPA), uncooled microbolometer
Spectral range	7.5–14 μm
Detector pitch	17 μm

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<b>Image presentation</b>	
Display	Built-in touch screen, 4.3 in. wide screen LCD, 800 × 480 pixels
Display type	Capacitive touch screen
Auto orientation	Automatic landscape or portrait
Viewfinder	Built-in 800 × 480 pixels
Automatic image adjustment	Continuous, histogram based
Automatic image adjustment, type	Standard or histogram based from image content
Manual image adjustment	Linear based; Possible to adjust level/span/max/min
<b>Image presentation modes</b>	
Image modes	Thermal, Thermal MSX, Picture in Picture, Digital Camera
Infrared image	Full color IR image
Visual image	Full color visual image
Multi Spectral Dynamic Imaging (MSX)	Thermal image with enhanced detail presentation
Picture in Picture	Resizable and movable IR area on visual image
Gallery	<ul style="list-style-type: none"> <li>Review thumbnail/full image on camera</li> <li>Edit measurements/palettes/image modes on camera</li> </ul>
<b>Measurement</b>	
Object temperature range	<ul style="list-style-type: none"> <li>-40°C to +150°C (-40°F to +302°F)</li> <li>0°C to +650°C (+32°F to +1202°F)</li> <li>+300°C to +2000°C (+572°F to +3632°F)</li> </ul>
Accuracy	<ul style="list-style-type: none"> <li>±1°C (±1.8°F) or ±1% @25°C (77°F) for temperatures between 5°C to 150°C (41°F to 302°F)</li> <li>±2°C (±3.6°F) or ±2% of reading @25°C (77°F) for temperatures up to 1200°C (2192°F)</li> </ul>
<b>Measurement analysis</b>	
Spotmeter	10
Area	5+5 areas (boxes and circles) with max./min./average
Profile	1 line profile with max/min temp
Automatic hot/cold detection	Auto hot or cold spotmeter markers within area and profile
Measurement presets	No measurements, Center spot, Hot spot, Cold spot, User preset 1, User preset 2
User presets	The user can select and combine measurements from any number of spots/boxes/circles/profiles/delta
Difference temperature	Delta temperature between measurement functions or reference temperature
Reference temperature	Manually set using difference temperature
Atmospheric transmission correction	Automatic, based on inputs for distance, atmospheric temperature and relative humidity
Optics transmission correction	Automatic, based on signals from internal sensors

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<b>Measurement analysis</b>	
Emissivity correction	Variable from 0.01 to 1.0 or selected from materials list
Reflected apparent temperature correction	Automatic, based on input of reflected temperature
External optics/windows correction	Automatic, based on inputs of window transmission and temperature
Measurement corrections	Emissivity, reflected temperature, relative humidity, atmospheric temperature, object distance, external IR window compensation
Colors (palettes)	Iron, Rainbow, Rainbow HC, White hot, Black hot, Artic, Lava
<b>Alarm</b>	
Color Alarm (isotherm)	Above/below/interval
Measurement function alarm	Audible/visual alarms (above/below) on any selected measurement function
<b>Set-up</b>	
Set-up commands	Define user presets, Save options, Programmable button, Reset options, Set up camera, Wi-Fi, GPS & compass, Bluetooth, Language, Time & units, Camera information
Languages	Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Simpl. Chinese, Swedish, Trad. Chinese, Turkish
<b>Service functions</b>	
Camera software update	Use PC software FLIR Tools
<b>Storage of images</b>	
Image storage	Standard JPEG, including digital photo and measurement data, on memory card
Storage media	Removable memory SD card (class 10)
Image storage mode	<ul style="list-style-type: none"> <li>• Simultaneous storage of thermal and digital photo in same JPEG.</li> <li>• Optional to store digital photo as separate JPEG.</li> </ul>
Time lapse	15 seconds to 24 hours
File formats	<ul style="list-style-type: none"> <li>• Standard JPEG, measurement data included</li> <li>• CSQ, measurement data included</li> </ul>
File formats, visual	Standard JPEG, automatically associated with corresponding thermal image
<b>Image annotations</b>	
Voice	60 seconds (via Bluetooth) stored with the image
Text	Add table. Select between predefined templates
Image description	Add short note (stored in JPEG exif tag)
Sketch	<ul style="list-style-type: none"> <li>• Draw on thermal/digital photo or add predefined stamps</li> <li>• Separate PC software with extensive report generation</li> </ul>



# FLIR T1020 45°

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<b>Geographic Information System</b>	
GPS	Location data automatically added to every image from built-in GPS
Compass	Camera direction automatically added to every image
<b>Video recording in camera</b>	
Radiometric IR-video recording	Real-time radiometric recording (RTRR) to memory card
Non-radiometric IR-video recording	H.264 to memory card
Visual video recording	H.264 to memory card
<b>Video streaming</b>	
Radiometric IR-video streaming	Real-time radiometric streaming (RTRS) via USB
Non-radiometric IR-video streaming	<ul style="list-style-type: none"> <li>H.264 video using Wi-Fi</li> <li>H.264 video using USB</li> </ul>
Visual video streaming	<ul style="list-style-type: none"> <li>H.264 video using Wi-Fi</li> <li>H.264 video using USB</li> </ul>
<b>Digital camera</b>	
Digital camera	FOV adapts to the IR lens
Video lamp	Built-in LED light
<b>Laser pointer</b>	
Laser	Activated by dedicated button
Laser alignment	Position is automatic displayed on the IR image
Laser classification	Class 2
Laser type	Semiconductor AlGaInP diode laser, 1 mW, 635 nm (red)
<b>Data communication interfaces</b>	
Interfaces	USB-micro-AB, Bluetooth, Wi-Fi, HDMI
Bluetooth	Communication with headset
Wi-Fi	Peer to peer (adhoc), infrastructure (network) or AP
SD Card	One card slot for removable SD memory cards
Audio	Microphone headset via Bluetooth for voice annotation of images
<b>USB</b>	
USB	USB Micro -AB: Data transfer to and from PC / Uncompressed colorized video
USB, standard	<ul style="list-style-type: none"> <li>USB 2.0 High Speed</li> <li>USB Micro-AB connector</li> </ul>
<b>Video</b>	
Video out	HDMI compatible
Video, connector type	HDMI type C

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<b>Radio</b>	
Wi-Fi	<ul style="list-style-type: none"> <li>Standard: 802.11 b/g/n</li> <li>Frequency range: 2412–2462 MHz</li> <li>Max output power: 15 dBm</li> </ul>
Bluetooth	Frequency range: 2402–2480 MHz Supports 2.1, 4.0 and 4.0BLE
Antenna	Internal
<b>Power system</b>	
Battery type	Rechargeable Li Ion battery
Battery operating time	> 2.5 hours at 25°C (+68°F) and typical use
Charging system	In camera (AC adapter or 12 V from a vehicle) or 2-bay charger
Charging time	2.5 h to 90 % capacity, charging status indicated by LED's
Charging temperature	0°C to +45°C (+32°F to +113°F)
External power operation	AC adapter 90–260 VAC, 50/60 Hz or 12 V from a vehicle (cable with standard plug, optional)
Power management	Automatic power-off functionality, user-configurable between 5 min, 20 min, or no automatic shutdown
<b>Environmental data</b>	
Storage temperature range	–40°C to +70°C (–40°F to +158°F)
Humidity (operating and storage)	IEC 60068-2-30/24 h 95% relative humidity +25° C to +40°C (+77°F to +104°F) / 2 cycles
EMC	<ul style="list-style-type: none"> <li>ETSI EN 301 489-1 (radio)</li> <li>ETSI EN 301 489-17</li> <li>EN 61000-6-2 (Immunity)</li> <li>EN 61000-6-3 (Emission)</li> <li>FCC 47 CFR Part 15 Class B (Emission)</li> <li>ICES-003</li> </ul>
Radio spectrum	<ul style="list-style-type: none"> <li>ETSI EN 300 328</li> <li>FCC Part 15.247</li> <li>RSS-247 issue 1</li> </ul>
Encapsulation	IP 54 (IEC 60529)
Shock	25 g (IEC 60068-2-29)
Vibration	2 g (IEC 60068-2-6)
Safety	EN/UL/CSA/PSE 60950-1
Ergonomics	The viewfinder plus the 120° rotating optical block allow you to point the camera in multiple directions while maintaining a comfortable position
<b>Physical data</b>	
Weight	2.0 kg (4.3 lb.)
Camera size, excl. lens (L x W x H)	167.2 x 204.5 x 188.3 mm (6.6 x 8.0 x 7.4 in.)
Tripod mounting	UNC ¼"-20
Housing material	Magnesium



# FLIR T1020 45°

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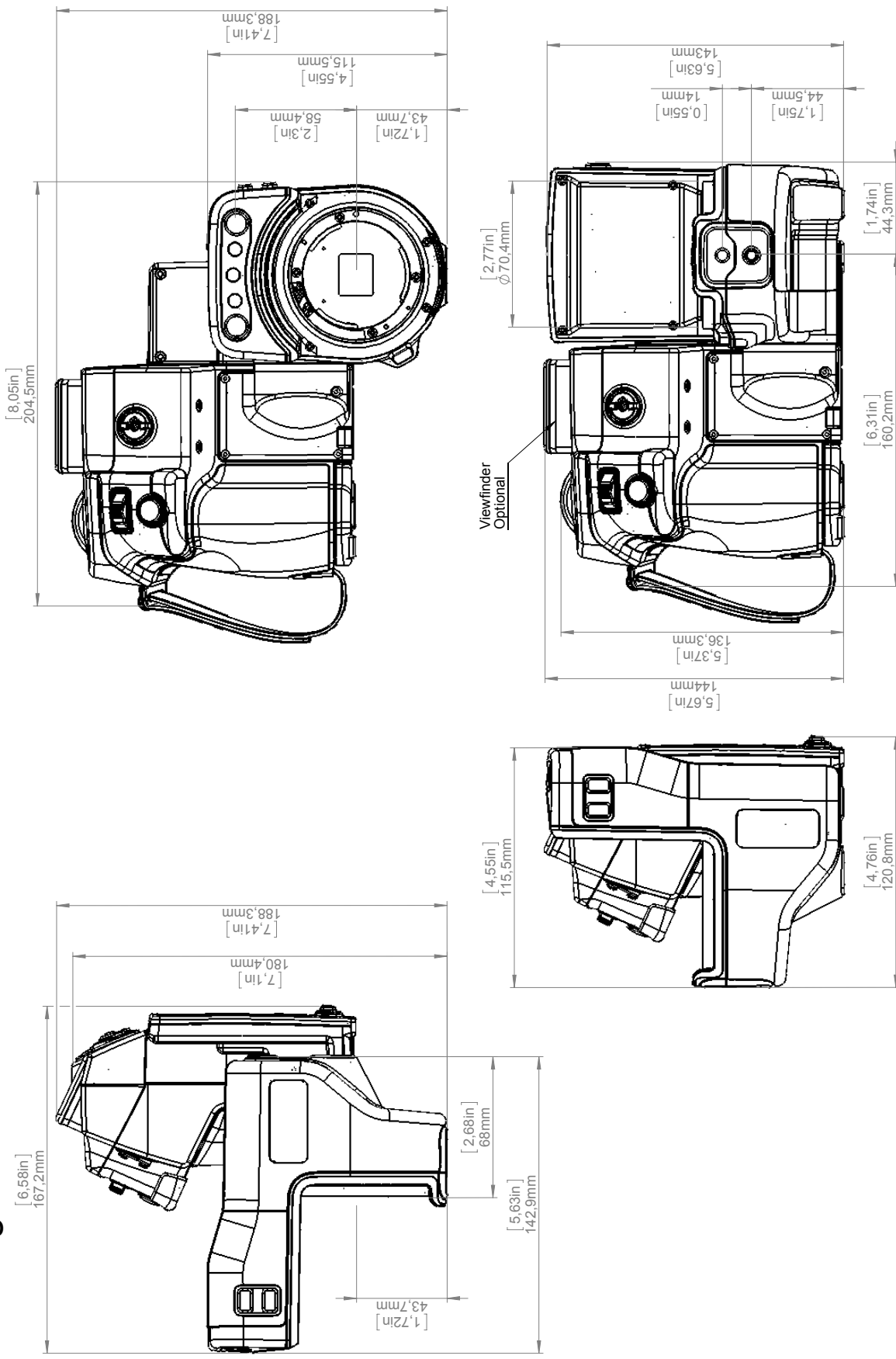
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<b>Warranty information</b>	
Warranty	<ul style="list-style-type: none"><li>• 2 Years parts and labor coverage on the camera</li><li>• 5 Years coverage on the battery</li><li>• 10 Years coverage on the detector – the most vital part of the whole camera</li></ul>
<b>Shipping information</b>	
List of contents	<ul style="list-style-type: none"><li>• Infrared camera with lens</li><li>• Battery (2 ea.)</li><li>• Battery charger</li><li>• Bluetooth headset</li><li>• Calibration certificate</li><li>• FLIR Tools+ license card</li><li>• User documentation CD-ROM</li><li>• Printed documentation</li><li>• HDMI-HDMI cable</li><li>• Hard transport case</li><li>• Large eyecap</li><li>• Lens cap</li><li>• Memory card</li><li>• Neck strap</li><li>• Power supply, incl. multi-plugs</li><li>• USB cable, Std A to Micro-B</li></ul>
EAN-13	7332558010297
UPC-12	845188010935
Country of origin	Sweden

### Supplies & accessories:

- T199064; IR lens f=36mm (28°) with case
- T199066; IR lens f=21.2mm (45°) with case
- T199077; IR lens f=83.4mm (12°) with case

# Camera housing

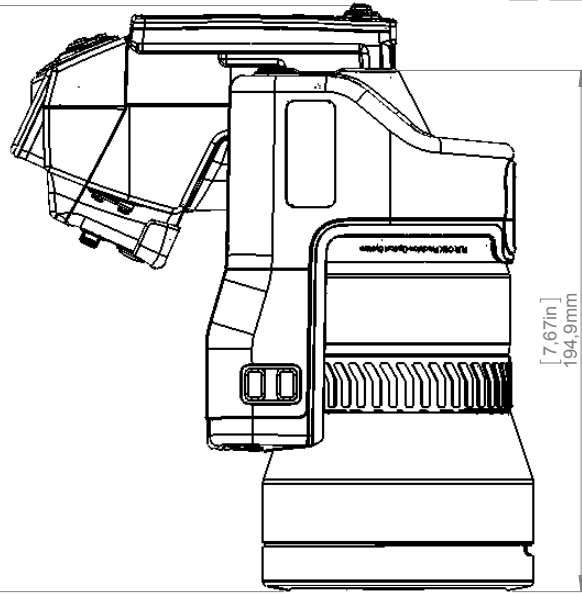


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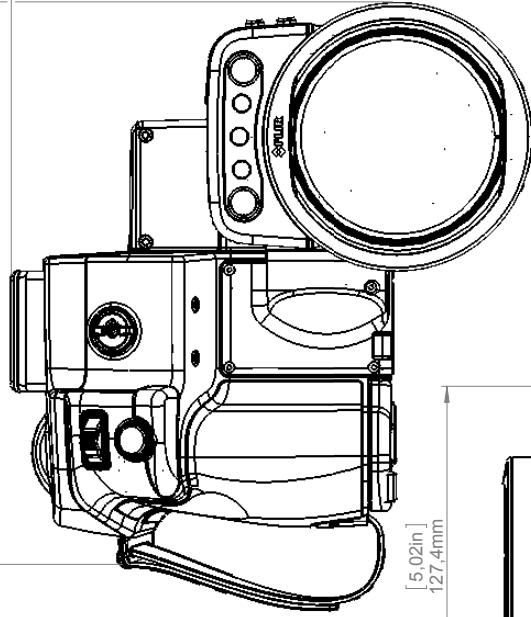
Modified 2015-09-17	Check JOTA	Drawn by R&D Thermography	FLIR
Denomination Basic dimensions FLIR T10xx			Sheet 1(7)
Size A3	Scale 1:2	Drawing No. T128849	Size D

# IR-LENS 12° (f=83,4mm)

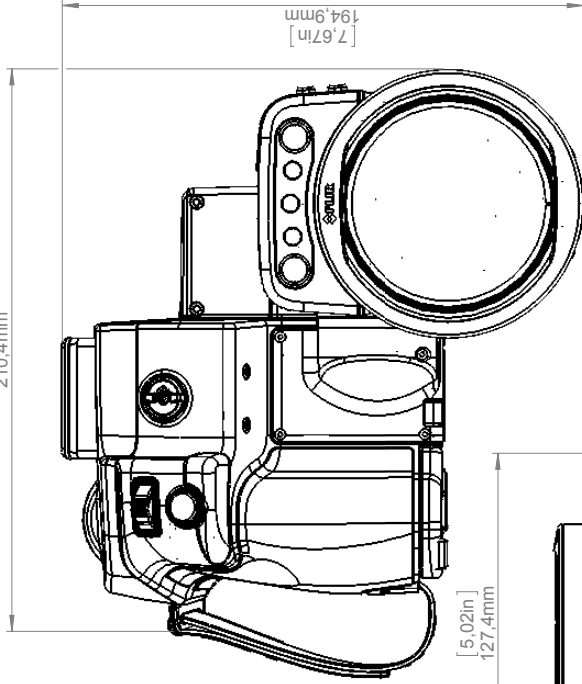
[8,63in]  
219,2mm



[7,67in]  
194,9mm

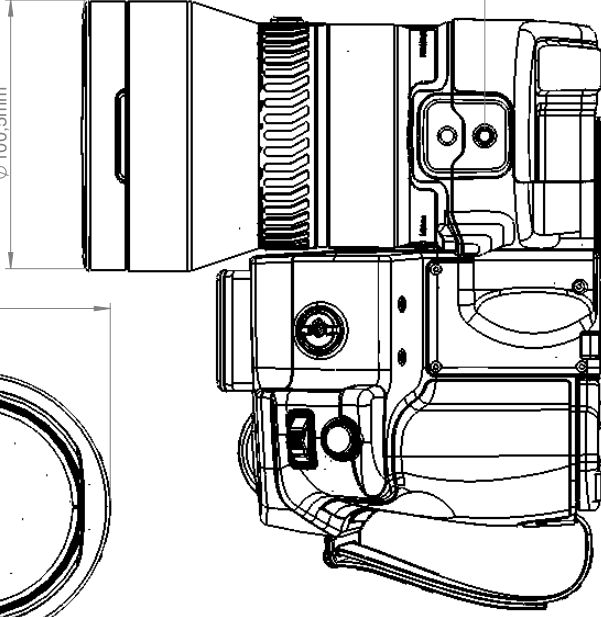


[8,29in]  
210,4mm

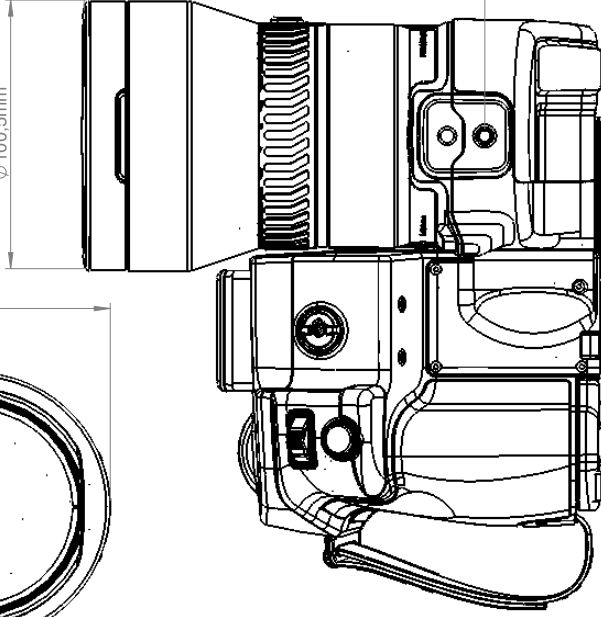


[7,67in]  
194,9mm

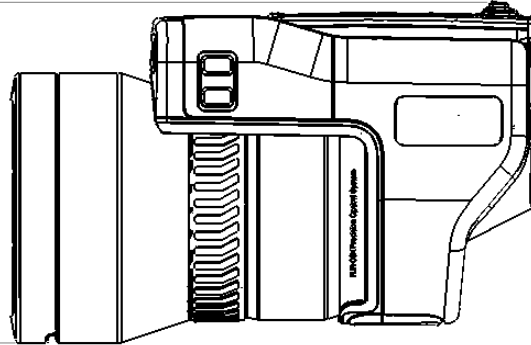
[3,96in]  
ϕ100,5mm



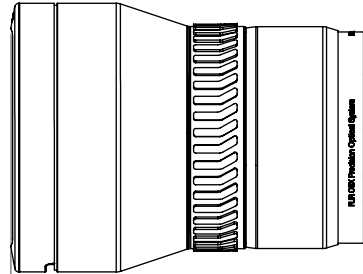
[5,9in]  
149,9mm



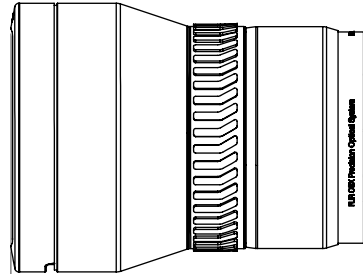
[5,02in]  
127,4mm



[5,28in]  
134,1mm



[5,19in]  
131,9mm



		Drawing No. <b>T128849</b>
Modified 2015-09-17 Denomination	Check JOTA	Drawn by R&D Thermography
Size <b>A3</b>		
Scale <b>1:2</b>		
Sheet <b>2(7)</b>		
Drawing No. <b>T128849</b>		
Size <b>D</b>		

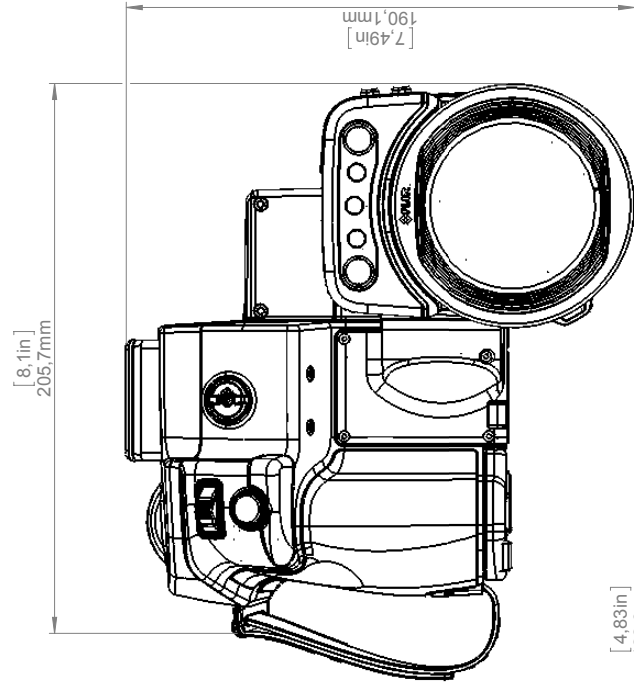
## Basic dimensions FLIR T10xx

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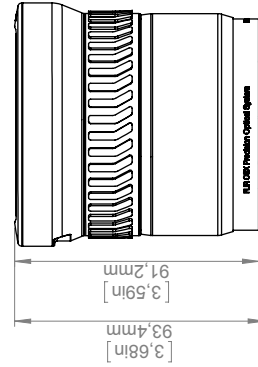
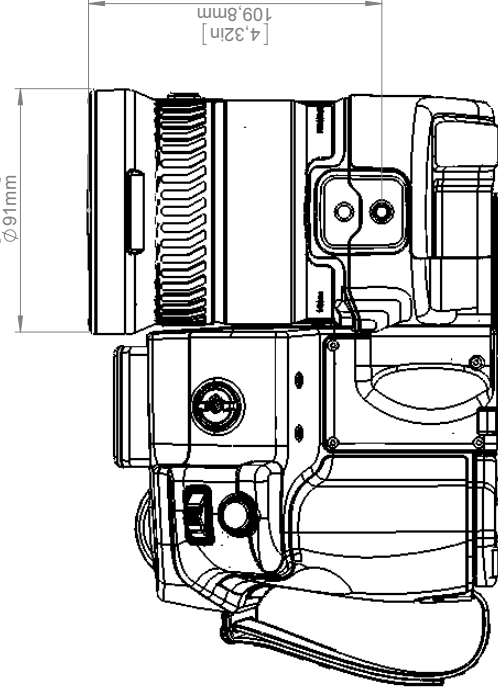
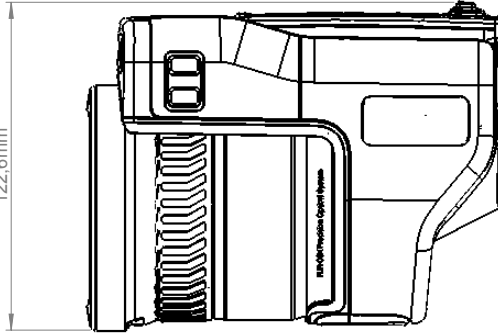
# IR-LENS 28° (f=36mm)

[ 8,1in ]  
205,7mm



[ 4,83in ]  
122,6mm

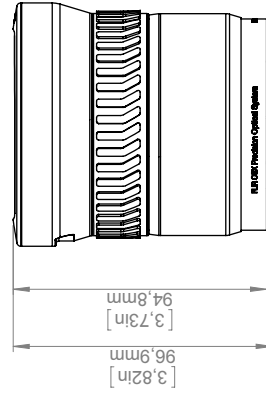
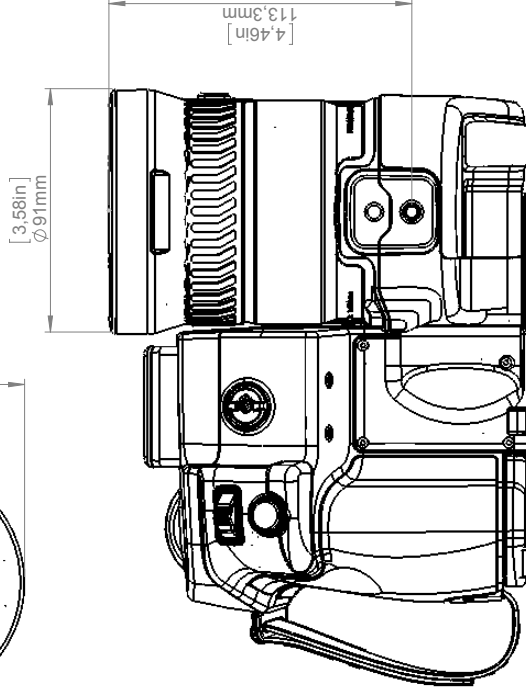
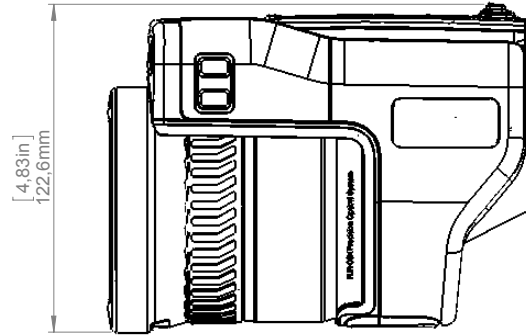
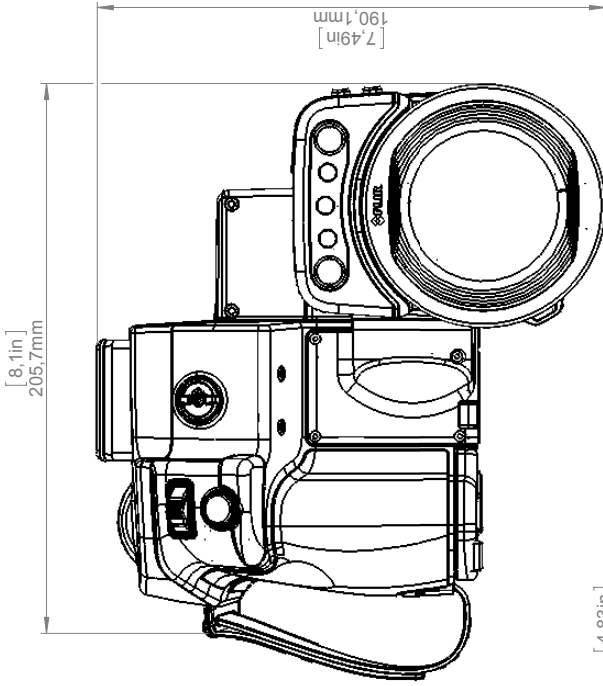
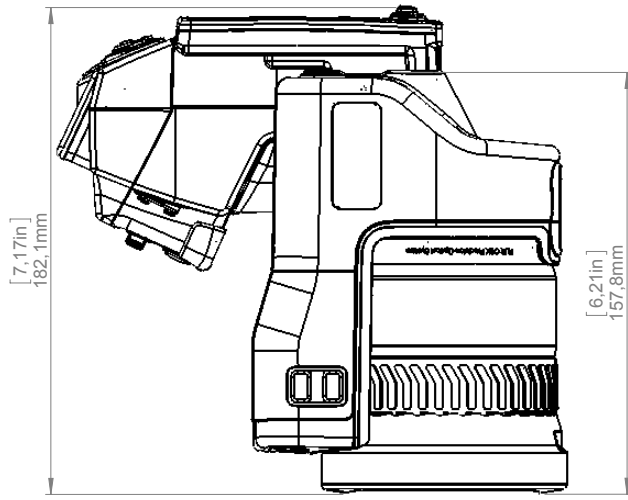
[ 3,58in ]  
Ø 91mm



		Drawing No. <b>T128849</b>
Modified 2015-09-17 Denomination	Check JOTA	Drawn by R&D Thermography
Size <b>A3</b>		Sheet 3(7)
Scale 1:2		Size D
<b>Basic dimensions FLIR T10xx</b>		

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# IR-LENS 45° (f=21,2mm)



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Denomination

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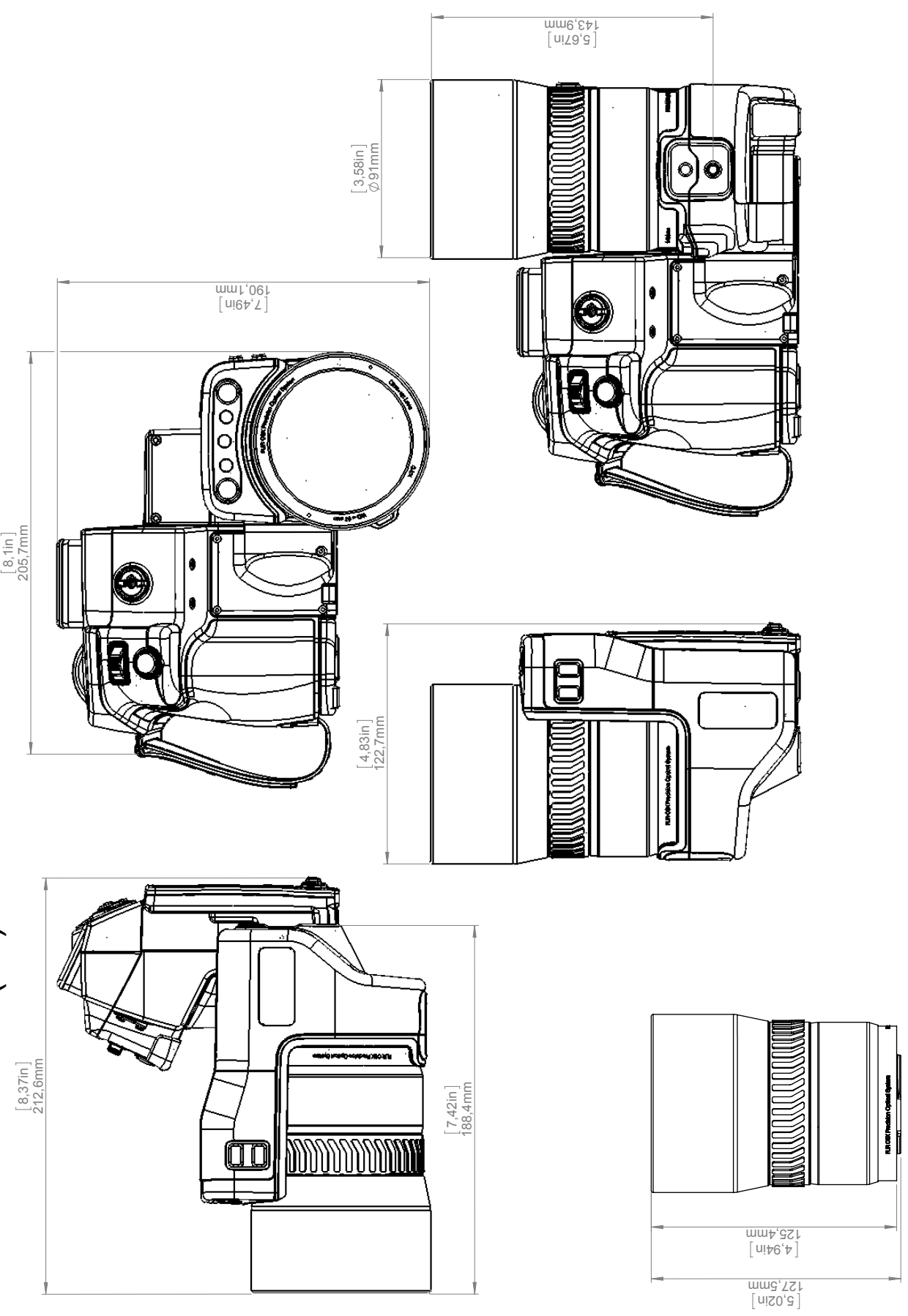
Size A3

Basic dimensions FLIR T10xx

Scale 1:2  
Drawing No. T128849  
Sheet 4(7)  
Size D



# IR-LENS CLOSE-UP (3X)

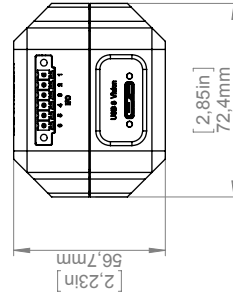
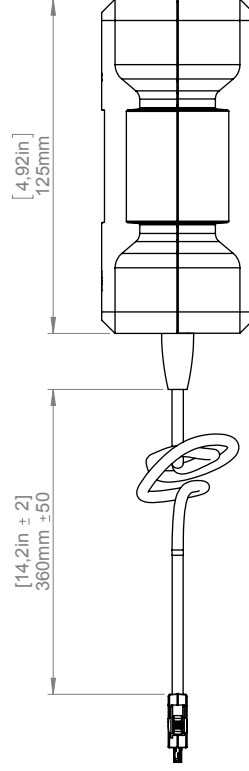
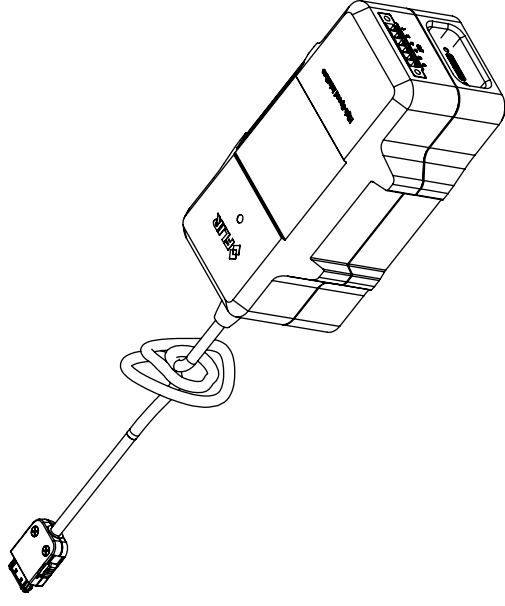
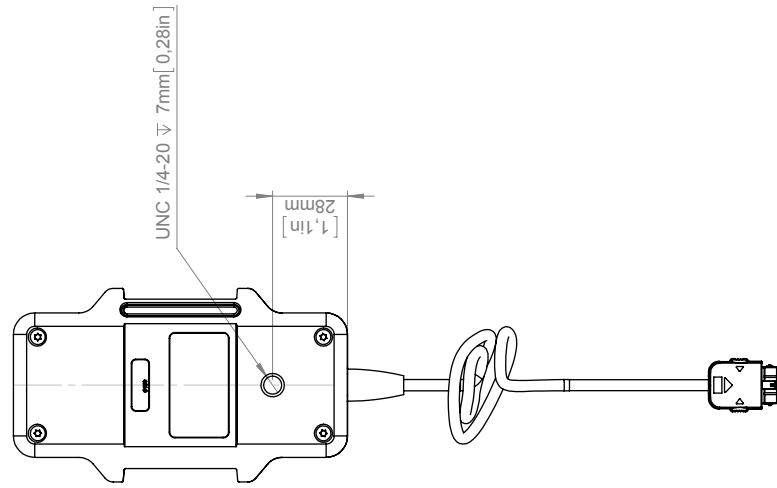


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Basic dimensions FLIR T10xx			Sheet 5(7)
Size A3			Scale 1:2
Drawing No. T128849			Size D



# High-Speed Interface



Modified	2015-09-17	Check	JOTA	Drawn by	R&D Thermography	Size	A3	
Denomination	Basic dimensions FLIR T10xx			Scale	1:2	Sheet	7(7)	
							Drawing No.	T128849
							Size	D





The World's Sixth Sense®

September 17, 2015 AQ320143

## CE Declaration of Conformity

This is to certify that the System listed below have been designed and manufactured to meet the requirements, as applicable, of the following EU-Directives and corresponding harmonising standards. The systems consequently meet the requirements for the CE-mark.

Directives:

**Directive 2004/108/EC;** **Electromagnetic Compatibility**

**Directive 2006/95/EC;** **“Low voltage Directive”**

**Directive 1999/5/EC** **“R&TTE on radio equipment and telecommunications terminal equipment”**

**Directive 2002/96/EC** **Waste electrical and electronic equipment; WEEE (As applicable)**

Standards:

**Emission:** **EN 61000-6-3; Electro magnetic Compatibility**  
**EN 301489-1 Generic standards - Emission**  
**EN 301489-17**

**Immunity:** **EN 61000-6-2; Electro magnetic Compatibility;**  
**EN 301489-1 Generic standards – Immunity**  
**EN 301489-17**

**Safety:** **EN 60950-1; Information technology equipment**  
**Safety**

**Laser:** **EN 60825-1; Safety of laser products**

**Radio** **ETSI EN 300 328**

**System:** **FLIR T1XXX series**

FLIR Systems AB  
Quality Assurance

  
Björn Svensson  
Director